

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Greg Becker et. al.  
SERIAL NO.: 10/614,347  
FILING DATE: July 8, 2003  
TITLE: System and Method for Backing up a Computer System  
EXAMINER: unassigned  
ART UNIT: 2171  
ATTY. DKT. NO.: 3166US

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as Express Mail in an envelope addressed to: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on **November 3, 2005**.

Signed: \_\_\_\_\_

*Stefanie Zilka*  
Stefanie Zilka

Mail Stop Petition  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

PETITION TO MAKE SPECIAL  
37 C.F.R. 1.102 and MPEP § 708.02(VIII)

Sir:

**1. Petition -- MPEP § 708.02(VIII)(A):**

Applicant hereby petitions to make this new application special. This application has not received any examination by the Examiner.

11/15/2005 EFLORES 00000053 10614347

01 FC:1464

130.00 OP

## **2. Fee**

A check for the petition amount has been included. The Office is authorized to charge any additional fees for this petition to Deposit Account No. 06-0600.

## **3. Claims -- MPEP § 708.02(VIII)(B)**

All of the claims in this case are directed to a single invention. If the Office determines that all of the claims presented are not directed to a single invention, then applicant will make an election without traverse as a prerequisite to the grant of special status.

## **4. Searches and Declaration – MPEP § 708.02(VIII)(C)**

As the undersigned practitioner, being duly registered to practice before the U.S. Patent and Trademark Office, I declare that a careful and thorough pre-examination search of the prior art has been made.

The searches were carried out by technical experts using commercially available databases of patents and publications, and were supplemented with materials provided by the client.

The classes and subclasses searched include:

714/6105; 707/1, 8, 101, 102, 200, 202, 203, 204, 205; 711/100, 154, 161, 162, 163, 170, 203; 365/200

The terms used in defining the search include combinations of the following:

“backup”, “back-up”, “continuous”, “data”, “recovery”, “increment”, “backward increment”, “continuous data recovery”, “backup agent”, “back-up agent”, “log”, and “intercept”. The resulting potential references were reviewed for their degree of relevancy to the present invention.

## **5. Discussion of Related References --MPEP § 708.02(VIII)(D) and (E)**

The references deemed most closely related to the subject matter of the claimed invention are discussed below. Each of the references are being submitted concurrently with an Information Disclosure Statement. Also attached is form PTO/SB/08A.

### **(1) U.S. Pat. No. 6,934,877 by Tamatsu, issued August 23, 2005 (hereinafter "Tamatsu")**

This reference is entitled "Data Backup/Recovery System." Tamatsu teaches a data backup and recovery system comprised of a primary system that updates the source data and one or more secondary systems that back up the source data. The secondary systems have the same logical configuration as the primary system and perform backups by acquiring the most recent data in real time. The update histories maintained by the secondary systems may be used to restore the primary system to a given state at an earlier point in time.

Tamatsu requires that secondary systems have the same logical configuration as the primary system for performing backups. Tamatsu discloses that a primary system uses blocks to sequentially store records associated with one unique key. The location of these blocks are managed by location tables that place the blocks in correspondence with physical addresses in random access memory. One or more secondary systems consist of blocks that correspond to the blocks within the primary system in a format logically identical to the source data on the primary system. When the source data is updated, the secondary system updates its backup data. Tamatsu does not disclose an agent or intercept for capturing data.

Tamatsu does not disclose or suggest Applicant's backup system. Tamatsu does not teach or suggest "determining a backward increment" or "storing the backward increment" as set forth in claims 1 and 20. Accordingly, the backup system disclosed in Tamatsu is distinguishable from the backup system disclosed by Applicant.

(2) **U.S. Pat. No. 6,915,315 by Autrey et. al., issued July 5, 2005 (hereinafter “Autrey”)**

This reference is entitled “Self Archiving Log Structured Volume with Intrinsic Data Protection” and provides a data backup system for use with a server running a storage application that writes and reads data blocks. The system includes a self archiving log structured volume for copying blocks from an active volume while the application is running without contending with the application for access to data blocks. The volume records the result of every write event in a new location in primary storage, forming a chronological log of the state changes the volume undergoes. The volume records in the log the points in time (synch events) when the blocks of the volume are in a consistent state with respect to the application. The system further includes backing storage to store the archived blocks and synch events of the volume. The volume migrates inactive segments of its log to the backing storage. As a result, the volume can be reconstructed from a fixed number of log segments.

Autrey discloses a self archiving log structured volume that captures every written block and synch event generated by activity of a storage application. The self archiving log structured volume writes first to primary storage and subsequently to backing storage. A volume can be reconstructed from a given point through a data backup system which seeks a given point within the self archiving log. The data backup system then traces through the log to rebuild the index of data blocks.

Autrey does not disclose or suggest Applicant’s backup system. Autrey does not teach or suggest “determining a backward increment” or “storing the backward increment” as set forth in claims 1 and 20. Accordingly, the backup system disclosed in Autrey is distinguishable from the backup system disclosed by Applicant..

(3) **U.S. Pat. No. 6,848,037 by Flaherty et al., issued January 25, 2005 (hereinafter “Flaherty”)**

This reference is entitled “Data Processing Arrangement and Method.” The data processing arrangement and method discloses a data processing system and method for creating a fuzzy backup only of objects older than a predetermined threshold, and restoring from the

fuzzy backup and from a record log replayed from a time equal to the predetermined threshold before the fuzzy backup start time.

The backup system disclosed in Flaherty implements a “fuzzy” backup. A “fuzzy” backup is a backup version that may not accurately reflect what is currently in the file because the file was backed up at the same time as it was being modified. The “fuzzy” backups are shorter in order to minimize backup time and required resources. As the number of backups of the system increase, the size of the recovery log decreases since the recovery log tracks only data that has not already been backed up.

Flaherty does not disclose or suggest Applicant’s backup system. Flaherty does not teach or suggest non-fuzzy backups, “determining a backward increment” or “storing the backward increment” as set forth in claims 1 and 20. Accordingly, the backup system disclosed in Flaherty is distinguishable from the backup system disclosed by Applicant.

**(4) U.S. Pat. No. 6,732,244 by Ashton et. al., issued May 4, 2004 (hereinafter “Ashton”)**

This reference is entitled “Instant Virtual Copy Technique with Expedited Creation of Backup Dataset Inventory from Source Dataset Inventory.” Ashton sets forth copying a body of source data with rapid creation of a backup dataset inventory. While write operations to the source data are temporarily suspended, a backup manager conducts an instant virtual copy of the source data creating a backup copy. While write operations are being suspended, the backup manager captures contents of a source dataset inventory cross-referencing datasets in the source data and locations in the body of source data where the datasets are stored. After the copy operation completes and writes to the source data resume, the backup manager adds the captured backup contents to a backup dataset inventory cross-referencing datasets in the backup copy and locations where the backup copy datasets are stored in the backup copy.

Ashton’s data backup system discloses a backup manager which creates a backup dataset inventory while the write operations are suspended. The process is accomplished by reading the source dataset inventory into memory, performing a virtual cop of data including the source dataset inventory, and copying the inventory to nonvolatile storage. The source dataset inventory links source data to the locations where the datasets are stored. Much of this process requires speed in order to minimize the suspension of write operations.

Ashton does not disclose or suggest Applicant's backup system. Ashton does not teach or suggest "determining a backward increment" or "storing the backward increment" as set forth in claims 1 and 20. Accordingly, the backup system disclosed in Ashton is distinguishable from the backup system disclosed by Applicant.

**(5) U.S. Pat. No. 5,381,545 by Baker et. al., issued January 10, 1995 (hereinafter "Baker")**

This reference is entitled "Data Backup and Recovery in a Data Processing Program." Baker sets forth a data processing system for managing stored data. A log recording incremental updates to the data is provided for data recovery purposes in the event of a system failure. A backup copy of a portion of the stored data can be made without closing that portion for update. Any in-progress modifications at the time of backup are allowed for by calculating a recovery point before the time of the backup, from which point recovery is to be performed using the recovery log. The recovery point depends at least in part on the start time of the oldest in-progress data file update.

In Baker, a log provides a record of each incremental change made to a file since the last complete backup was taken. When recovery is required, the data stored in the backup copy are reinstated into the database and the updates stored in the recovery log are applied sequentially to the data. The recovery log only maintains the incremental changes since the last backup was made. Further, in Baker, only forward recovery is taught rather than storing a backward increment..

Baker does not disclose or suggest Applicant's backup system. Baker does not teach or suggest "determining a backward increment" or "storing the backward increment" as set forth in claims 1 and 20. Accordingly, the backup system disclosed in Baker is distinguishable from the backup system disclosed by Applicant.

**(6) U.S. Pat. App. No. 2003/0074378 A1 by Midgley et. al., published April 17, 2003**  
**(hereinafter “Midgley”)**

This reference is entitled “Systems and Methods for Backing Up Data Files.” Midgley describes continuous back up of data stored on a computer network. A synchronization process replicates selected source data files stored on the network and creates a corresponding set of replicated data files, called the target data files, which are stored on a back up server. This synchronization process builds a baseline data structure of target data files. In parallel to this synchronization process, a dynamic replication process with a plurality of agents monitors a portion of the source data files to detect and capture, at the byte-level, changes to the source data files. Each agent may record the changes to a respective journal file. As the dynamic replication process detects that the journal files contain data, the journal files are transferred or copied to the back up server so that the captured changes can be written to the appropriate ones of the target data files.

Midgley discloses a synchronization backup system and a dynamic replication process. The synchronization replication process creates an image of a customer selected data structure (not data files) on a back up server. The dynamic replication process monitors file input/output calls associated with these data structures. Midgley describes that a temporary journal captures file modifications during back up. The temporary journal does not permanently store data files. Once back up is complete, the captured file modifications are then copied back to the target files.

Midgley does not disclose or suggest Applicant’s backup system. Midgley does not teach or suggest “determining a backward increment” or “storing the backward increment” as set forth in claims 1 and 20. Accordingly, the backup system disclosed in Midgley is distinguishable from the backup system disclosed by Applicant.

**(7) U.S. Pat. App. No. 2003/0081468 A1 by Kubiak, published May 1, 2003 (hereinafter**  
**“Kubiak”)**

This reference is entitled “Method and Device for Backing Up Data in a Memory Module and Memory Module.” Kubiak sets forth backing up data in a non-volatile memory module. The data is stored multiple times in the memory module. The data is backed up using at least one check identifier. The check identifier and a bit-by-bit content of the data are correlated and

at least one validity identifier stipulates which of the data stored multiple times may be read out. In addition to the data, the check identifiers and the validity identifiers are stored multiple times in the memory module. The check identifiers and validity identifiers are assigned to the corresponding data.

Kubiak discloses a method for backing up data with a memory module, such as an EEPROM, to prevent immediate data losses. Kubiak further proposes a data backup system to protect against direct phenomena, such as interruptions in write operations or voltage outages, or indirect phenomena, such as bit upsets.

Kubiak does not disclose or suggest Applicant's backup system. Kubiak does not teach or suggest "determining a backward increment" or "storing the backward increment" as set forth in claims 1 and 20. Accordingly, the backup system disclosed in Kubiak is distinguishable from the backup system disclosed by Applicant.

**(8) U.S. Pat. App. No. 2004/0143713 A1 by Niles, published July 22, 2003 (hereinafter "Niles")**

This reference is entitled "System and Method for Backing Up Data." Niles sets forth a hash-optimized backup system which takes data blocks and generates a probabilistically unique digital fingerprint of the content of each data block with a substantially collision-free algorithm. The process compares the generated fingerprint to a database of stored fingerprints and, if the generated fingerprint matches a stored fingerprint, the data block is determined to already have been backed up, and therefore does not need to be backed up again. Only if the generated fingerprint does not match a stored fingerprint is the data block backed up, at which point the generated fingerprint is added to the database of stored fingerprints. Because the algorithm is substantially collision-free, there is no need to compare actual data content if there is a hash-value match. The process can also be used to audit software license compliance, inventory software, and detect computer-file tampering such as viruses and malware.

Niles discloses a system that generates a probabilistically unique digital fingerprint of the content of every data block of a file. As each data block of the file is backed up for the first time, the unique digital fingerprint is stored. Subsequently, the system continues to generate probabilistically unique digital fingerprints of other data blocks. If the digital fingerprint



matches with a digital fingerprint already stored, then the system does not back up the associated data block. However, if the digital fingerprint does not match with a digital fingerprint already stored, then the digital fingerprint and the associated data blocks are backed up. The algorithm for generating the fingerprint is a hash function.

Niles does not disclose or suggest Applicant's backup system. Niles does not teach or suggest "determining a backward increment" or "storing the backward increment" as set forth in claims 1 and 20. Accordingly, the backup system disclosed in Niles is distinguishable from the backup system disclosed by Applicant.

**(9) U.S. Pat. App. No. Data 2005/0114285 A1 by Cincotta, published May 26, 2005**  
**(hereinafter "Cincotta")**

This reference is entitled "Data replication system and method." Cincotta discloses sub-second data replication which provides the ability to replicate database transactions made on one computer to one or more local or remote computers, utilizing the database management system's transaction log. The replication system intercepts transactions being sent to a database's transaction log, interprets, and copies the transactions to one or more replica servers, as well as to the original existing database transaction log. Reporting, backup and recovery is offloaded from the transaction server to a replica server. The central server controls a series of loadable modules to perform specific functions in the system, and an agent runs on every machine in the system that has a relational database management system running. The agent is either a source agent, gathering data from a source database server, or a destination (or target) agent, applying the data to the destination database, or both a source and destination agent.

Cincotta describes a data replication system for the recovery of data within a database. A database is not a data file. Cincotta discloses a system wherein a source database is in communication with a source database storage and a transaction log. A driver sends a signal to a source agent to indicate that a transaction is pending. In response, the source agent fetches the transaction and writes it to a physical transaction log. Further, the source agent sends the transaction to a central server which converts and forwards the transaction to a destination agent which writes the data to a destination database.

Cincotta does not disclose or suggest Applicant's backup system. Cincotta does not teach or suggest "determining a backward increment" or "storing the backward increment" as set forth in claims 1 and 20. Accordingly, the backup system disclosed in Cincotta is distinguishable from the backup system disclosed by Applicant.

(10) **U.S. Pat. App. No. 2002/0178173 A1 by Chefalas et. al., published November 28, 2002 (hereinafter "Chefalas")**

This reference is entitled "Method and Apparatus for Performing the Identification of Files to be Backed up using Relational Meta Data." Chefalas discusses backing up data in a data processing system. In response to a request to backup data associated with an application, a data store is queried containing meta data regarding files associated with the application in which the data store includes meta data describing the files accessed by the application. A result is received in response to querying the data store, and contains information about files that need to be backed up. The information is then used to drive the backup program. The files are then subsequently backed up to a storage system.

Chefalas discloses a system wherein a request is received from a requestor to back up data files for an application. The request may be submitted by the user of the application. Further, the request may be after a predetermined period of time. In either event, Chefalas does not disclose or claim a continuous data recovery system.

Chefalas does not disclose or suggest Applicant's backup system. Chefalas does not teach or suggest "determining a backward increment" or "storing the backward increment" as set forth in claims 1 and 20. Accordingly, the backup system disclosed in Chefalas is distinguishable from the backup system disclosed by Applicant.

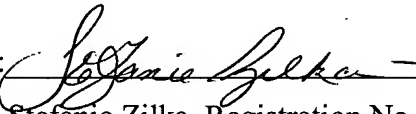
## 6. Conclusion

Applicant believes that this Petition to Make Special has met all requirements set forth by 37 C.F.R. 1.102 and MPEP § 708. 02(VIII), and respectfully requests that this Petition to Make Special be granted.

Respectfully submitted,  
Balaji Narasimhan

Date: 11/3/05

By:

  
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APPLICANTS: Greg Becker et al.  
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FILING DATE: July 8, 2003  
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EXAMINER: Unknown  
ART UNIT: 2171  
ATTY. DKT. NO.: PA3166US

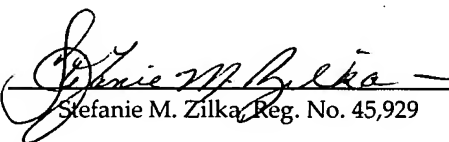
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CERTIFICATE OF MAILING

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Dated: November 3, 2005

By:

  
Stefanie M. Zilka, Reg. No. 45,929

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MAIL STOP PETITION  
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P.O. BOX 1450  
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INFORMATION DISCLOSURE STATEMENT  
Under 37 C.F.R. §§ 1.56, and 1.97-1.98

SIR:

Pursuant to the provisions of 37 C.F.R. §§ 1.56 and 1.97-98 of the Rules of Practice in Patent Cases, enclosed herewith is form PTO-SB-08A, listing several references, copies of which are enclosed.

The Examiner is requested to make these references of official record in this application. The references cited may be material to examination of the application and

are submitted in compliance with Applicants' duty of disclosure as defined by 37 C.F.R. § 1.56.

No representation is made or intended as to the completeness of this list, nor is the inclusion of any reference on this list an admission that it is prior art or pertinent to this application.

Applicants believe no fee is due with this submission. If a fee is due, however, the Commissioner is hereby authorized to charge any necessary fee to Deposit Account No. 06-0600. A copy of this statement is submitted in duplicate for this purpose.

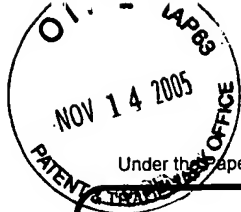
Respectfully submitted,  
Greg Becker et al.

Dated: November 3, 2005

By:

  
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**PETITION FEE**  
**Under 37 CFR 1.17(f), (g) & (h)**  
**TRANSMITTAL**

(Fees are subject to annual revision)

Send completed form to: Commissioner for Patents  
P.O. Box 1450, Alexandria, VA 22313-1450

Application Number	10/614,347
Filing Date	July 8, 2003
First Named Inventor	Greg Becker
Art Unit	2171
Examiner Name	Unknown
Attorney Docket Number	PA3166US

**Enclosed is a petition filed under 37 CFR 1.102 that requires a processing fee (37 CFR 1.17(f), (g), or (h)). Payment of \$ 130.00 is enclosed.**

This form should be included with the above-mentioned petition and faxed or mailed to the Office using the appropriate Mail Stop (e.g., Mail Stop Petition), if applicable. For transmittal of processing fees under 37 CFR 1.17(i), see form PTO/SB/17i.

**Payment of Fees** (small entity amounts are NOT available for the petition fees)☒ The Commissioner is hereby authorized to charge the following fees to Deposit Account No. 06-0600:☐ petition fee under 37 CFR 1.17(f), (g) or (h) ☒ any deficiency of fees and credit of any overpayments

Enclose a duplicative copy of this form for fee processing.

☒ Check in the amount of \$ 130.00 is enclosed.☐ Payment by credit card (Form PTO-2038 or equivalent enclosed). Do not provide credit card information on this form.**Petition Fees under 37 CFR 1.17(f): Fee \$400 Fee Code 1462**

For petitions filed under:

- § 1.53(e) - to accord a filing date.
- § 1.57(a) - to accord a filing date.
- § 1.182 - for decision on a question not specifically provided for.
- § 1.183 - to suspend the rules.
- § 1.378(e) - for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in an expired patent.
- § 1.741(b) - to accord a filing date to an application under § 1.740 for extension of a patent term.

**Petition Fees under 37 CFR 1.17(g): Fee \$200 Fee Code 1463**

For petitions filed under:

- § 1.12 - for access to an assignment record.
- § 1.14 - for access to an application.
- § 1.47 - for filing by other than all the inventors or a person not the inventor.
- § 1.59 - for expungement of information.
- § 1.103(a) - to suspend action in an application.
- § 1.136(b) - for review of a request for extension of time when the provisions of section 1.136(a) are not available.
- § 1.295 - for review of refusal to publish a statutory invention registration.
- § 1.296 - to withdraw a request for publication of a statutory invention registration filed on or after the date the notice of intent to publish issued.
- § 1.377 - for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of a patent.
- § 1.550(c) - for patent owner requests for extension of time in ex parte reexamination proceedings.
- § 1.956 - for patent owner requests for extension of time in inter partes reexamination proceedings.
- § 5.12 - for expedited handling of a foreign filing license.
- § 5.15 - for changing the scope of a license.
- § 5.25 - for retroactive license.

**Petition Fees under 37 CFR 1.17(h): Fee \$130 Fee Code 1464**

For petitions filed under:

- § 1.19(g) - to request documents in a form other than that provided in this part.
- § 1.84 - for accepting color drawings or photographs.
- § 1.91 - for entry of a model or exhibit.
- § 1.102(d) - to make an application special.
- § 1.138(c) - to expressly abandon an application to avoid publication.
- § 1.313 - to withdraw an application from issue.
- § 1.314 - to defer issuance of a patent.

  
Signature

Stefanie M. Zilka

Typed or printed name

November 3, 2005

Date

45,929

Registration No., if applicable

This collection of information is required by 37 CFR 1.17. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 5 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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